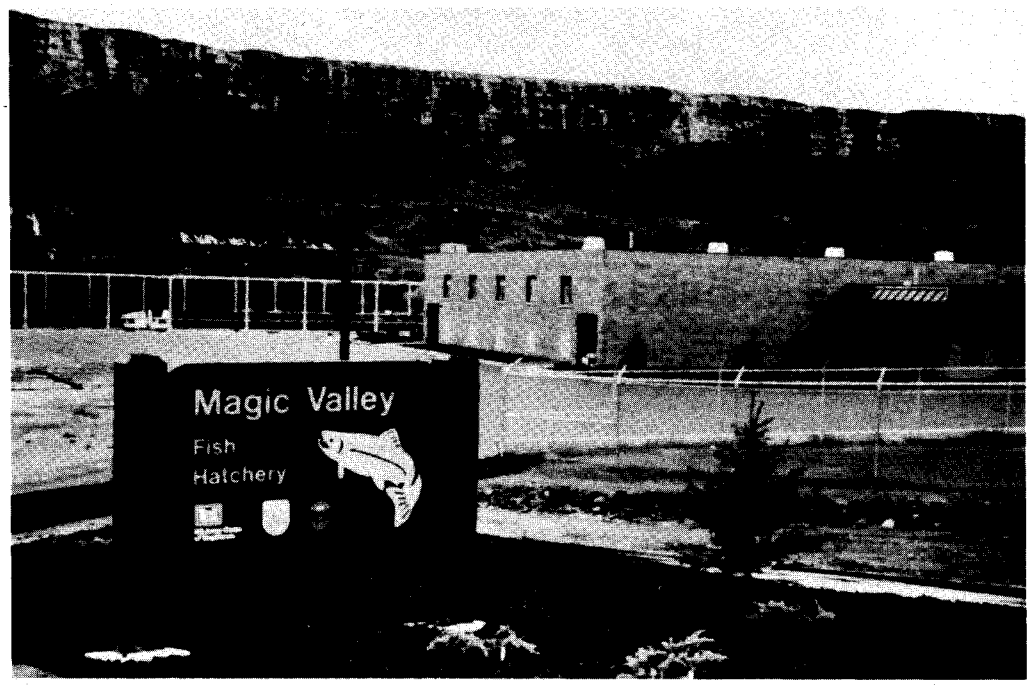
# MAGIC VALLEY STEELHEAD HATCHERY

**1987 Steelhead Brood Year**




**by**

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**ABSTRACT**

Magic Valley Steelhead Hatchery construction was completed in July 1987 by the U.S. Army Corps of Engineers, contracted by Beneco Enterprises for the hatchery construction and A and J Construction Company for the water collection system. Approximately one month before completion, the hatchery building was sufficiently complete to incubate the 922,250 eyed eggs and 1,194,526 fry received from Sawtooth Hatchery. These fish were reared for ten months and fed 554,000 pounds of feed for a conversion of 1.32.

In April 1988, 2,064,661 steelhead smolts, 8.3 inch (4.54 per pound) weighing 454,500 pounds were stocked in the Salmon River and its tributaries. No disease problems occurred in these fish this first year of production.

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## INTRODUCTION

Magic Valley Steelhead Hatchery completed its first year of Steelhead production as the latest anadromous steelhead hatchery constructed in Idaho by the U.S. Army Corps of Engineers. The hatchery is part of the Lower Snake River Fish and Wildlife Compensation Plan (LSRCP), compensating for losses of anadromous fish caused by the Lower Snake River dams. Constructed by the Corps of Engineers, the hatchery is funded by the U.S. Fish and Wildlife Service and operated by the Idaho Department of Fish and Game.

## LOCATION

The hatchery is located seven miles northwest of Filer in the Snake River Canyon near the mouth of Cedar Draw Creek. The hatchery's 125 cfs of 59°F water is piped from Crystal Springs on the north shore of the Snake River across the river to the hatchery site.

## OBJECTIVES

1. To hatch and rear two million steelhead trout smolts per year for stocking in the Salmon River and its tributaries.

2. Evaluate fish rearing capabilities of Magic Valley Hatchery.

## HATCHERY FACILITIES

The hatchery building houses the incubation/early rearing room with forty upwelling incubators, twenty concrete tanks (4 ft. x 3 ft. x 40 ft.), two fiberglass troughs (2 ft. x 1 ft. x 12 ft.) and sixty automatic fry feeders. The building contains an office, laboratory, wet laboratory, shop, dormitory, enclosed storage room, covered vehicle storage area, feed storage room, walk-in freezer and mechanical room for water pumps, water chiller and domestic water supply system. There are thirty-two outdoor rearing raceways (10 ft. x 3 ft. x 200 ft.) spanned by a moveable bridge equipped with automatic fish feeders. Two 30,000 lb. bulk feed bins, two fish feed fines shakers and a fish feed conveyor comprise the remainder of the feeding system. The hatchery effluent water is treated using two waste water settling ponds, a cleaning waste pond and a hatchery flow-thru waste pond. The spring collection facility on the north side of the Snake River collects the water in a concrete channel system and delivers the water to a central collection tank. A forty-two inch pipeline carries the water across the river to the hatchery site. There are four residences on the hatchery for housing the permanent personnel.

## FISH PRODUCTION

In the first year of production, capacities, densities and flows had to be established for each tank and raceway on the hatchery. The hatchery received 915,252 A-strain steelhead eyed eggs from Sawtooth Hatchery and 1,194,528 swim-up fry from Sawtooth Hatchery of Pahsimeroi steelhead stock during June.

The fish that emerged from the upwelling incubators were started on Rangen's soft moist fry feed. They were fed on soft moist feed for three weeks, changed to Rangen's dry salmon diet for the next seven months and the last month of rearing were fed Clear Springs trout diet.

Haskell's (1967) feeding rate formula was used to calculate the daily feed ration (2 body weight - food conversion factor x daily length of fish x 3 x 100/length in inches of fish). The feeding rate was figured on the growth of .027 inches per day starting with one-inch fish (swim-up fry) and ending with an 8.3-inch fish (smolt). The fish responded well to the feeding schedule and maintained the .8 inch per month growth rate throughout the rearing period (Figure 1). A total of 554,000 pounds of feed was fed, and the fish attained a conversion of 1.32 pounds of feed to produce a pound of fish.

Piper's (1970) formulas for density index (weight of fish/length of fish x cubic feet of water) and flow index (weight of fish/length of fish x gpm flow) were used to calculate the densities and flows for each tank or raceway. The raceways never exceeded the desired .25 density index or 1.25 flow index until just prior to release when some of the raceways reached a .32 density index and a 1.34 flow index without any detrimental effect on the fish (Table 1). The fish in the hatchery tanks were transferred to the outside raceways when they reached a density of .25 and attained a 2.0-inch (330/lb.) size.

The 1987 brood year started with 2,109,780 eggs and fry and ended with 2,063,700 steelhead smolts (97.81 survival) weighing 454,500 pounds and 4.54 per pound (8.3 inch). Smolts were transported to the Salmon River and its tributaries during the first three weeks of April (Table 2). Fish pathologist, Scott Foote, sampled fish monthly and found no disease pathogens.

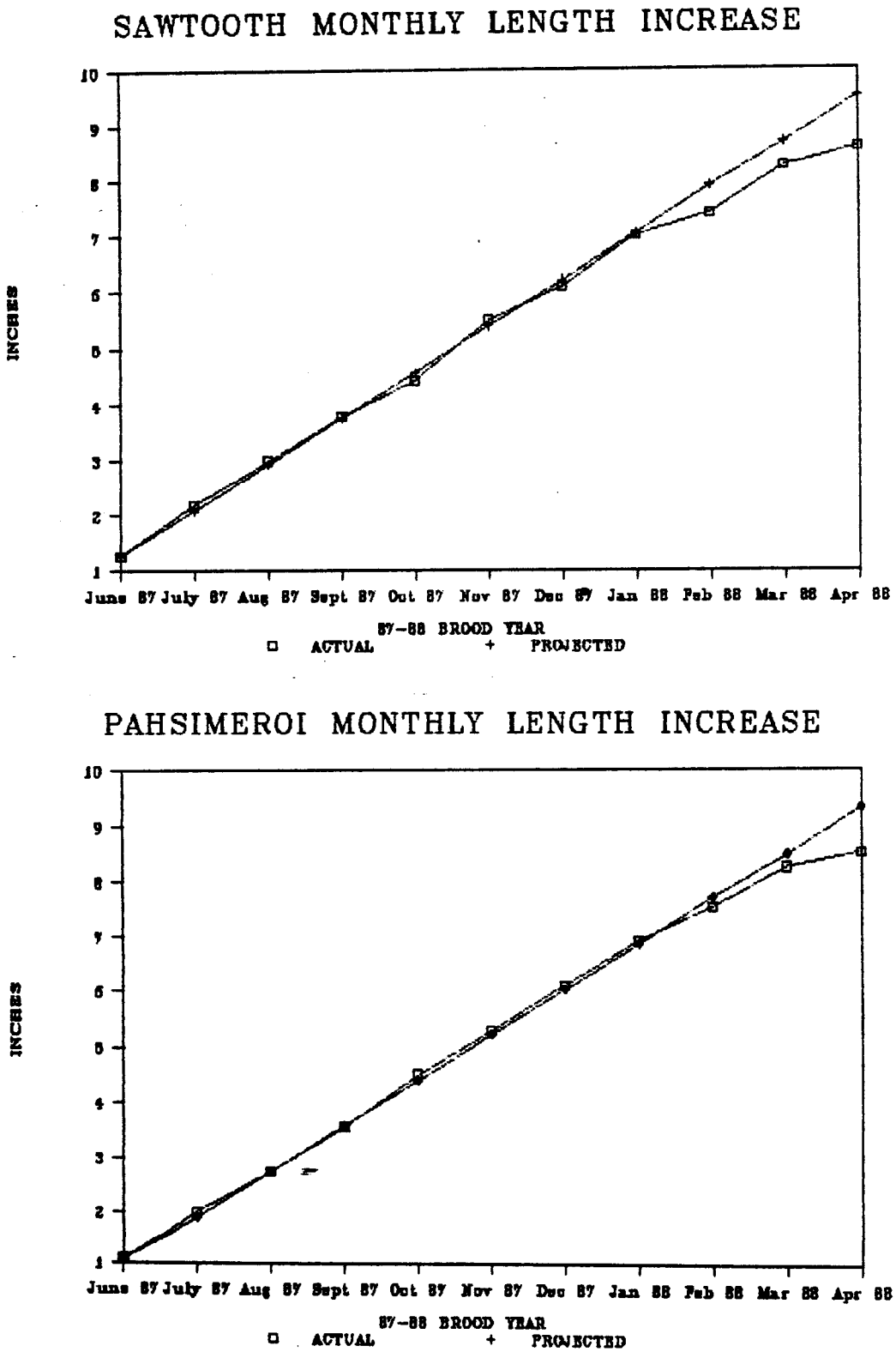


Figure 1. Magic Valley Hatchery 1987 Brood Year monthly growth plotted with projected growth for Pahsimeroi and Sawtooth stocks of A-strain steelhead.

Table 1. Final raceway inventory and indices for Magic Valley Hatchery A-strain steelhead.

| Raceway | Fish numbers | Weight (lbs.) | Number per lb. | Flow index | Density index |
|---|---|---|---|---|---|
| 1 | 140,257 | 29,550 | 4.75 | 1.22 | .29 |
| 2 | 131,362 | 29,250 | 4.49 | 1.18 | .29 |
| 3 | 134,954 | 29,300 | 4.61 | 1.11 | .29 |
| 4 | 132,746 | 29,900 | 4.43 | 1.12 | .29 |
| 5 | 135,975 | 29,000 | 4.69 | 1.19 | .29 |
| 6 | 120,031 | 26,350 | 4.56 | 0.94 | .26 |
| 7 | 113,980 | 25,500 | 4.48 | 0.90 | .25 |
| 8 | 123,838 | 28,200 | 4.42 | 1.13 | .27 |
| 9 | 118,537 | 26,450 | 4.49 | 1.06 | .26 |
| 10 | 143,339 | 29,900 | 4.79 | 1.15 | .30 |
| 11 | 120,003 | 27,050 | 4.44 | 1.09 | .26 |
| 12 | 121,638 | 29,050 | 4.19 | 1.15 | .28 |
| 13 | 124,352 | 27,100 | 4.59 | 1.10 | .27 |
| 14 | 104,500 | 23,950 | 4.36 | 0.96 | .23 |
| 15 | 141,358 | 31,750 | 4.45 | 1.28 | .31 |
| 16 | 157,791 | 32,200 | 4.90 | 1.34 | .32 |
| TOTALS | 2,064,661 | 454,500 | 4.54 | 1.12 | .27 |

Table 2. Steelhead smolt distribution in the Salmon River and tributaries.

| Destination | Weight | Number/pound | Total number |
|---|---|---|---|
| French Creek | 21,850 | 4.57 | 100,000 |
| Hammer Creek | 18,500 | 4.71 | 87,200 |
| Hazard Creek | 156,950 | 4.47 | 701,300 |
| North Fork Salmon | 53,450 | 4.74 | 253,112 |
| Panther Creek | 35,200 | 4.62 | 62,759 |
| Sawtooth Hatchery | 12,300 | 4.69 | 57,743 |
| Shoup Bridge | 31,100 | 4.74 | 147,530 |
| Slate Creek | 80,750 | 4.30 | 347,441 |
| Yankee Fork | 44,400 | 4.69 | 208,015 |

## FISH MARKING

### Fin Clipping

All of Idaho's hatchery steelhead are required to have an adipose fin clip identifying them from wild steelhead. At Magic Valley Hatchery, the fin clipping crews clipped 2,116,071 fish during October and November. Fin clipping attributed to a 0.0462 mortality rate. After all fish were marked, personnel randomly sampled the entire population and found 99.882 had an acceptable fin clip.

### Coded Wire Tagging

During November, the coded wire tagging crew tagged 53,044 steelhead presmolts and marked them with a left ventral clip. During April, 52,300 tagged fish were released in the Little Salmon River near Hazard Creek.

## STAFFING

The hatchery is staffed with four permanent employees: Hatchery Superintendent III, Hatchery Superintendent II, Fish Culturist, and Roving Fish Culturist. Several temporary positions of Bio-aides and Laborers are employed at various times of the year to assist with fish cultural duties during peak production, transportation and in the absence of the Roving Fish Culturist.

**ACKNOWLEDGEMENTS**

The hatchery personnel appreciate the outstanding job that Beneco Enterprises (primary contractor) accomplished in the construction of the hatchery and the cooperation and assistance received in the first year of operation. Also, the cooperation, guidance and assistance that the Corps of Engineers and U.S. Fish and Wildlife personnel extended during the construction and first *year* of operation.

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